Claims

[c1] Antenna system composed of (N+1) virtually identical radiating structures with N greater than or equal to 1, said (N+1) structures arranged parallel to each other, each radiating structure is connected to a power supply and impedance matching device wherein it comprises at least a processor (15) equipped with control logic Cm adapted to tune the "master" radiating structure and vary at least one of the tuning parameters so that they converge towards the values leading to tuning and logic Cs adapted to transfer the parameters corresponding to the tuning of the "master" radiating structure to the "slave" radiating structure(s).

[c2] Antenna system according to claim 1, wherein the power supply devices are chosen to supply Radio Frequencies whose phases are approximately equal to most or all of the (N+1) radiating structures.

[c3] Antenna system according to claim 2, wherein it comprises at least:
a first assembly (R_1) consisting of a radiating structure (1_1), a power supply and impedance matching assembly (3_1) with control logic (Cm) enabling it to operate as master to manage the antenna system tuning phase by varying the values of the variable elements such as the capacitive (41_1), or inductive (42_1) elements and the variable capacitor (12_1) so that they converge towards the values leading to tuning;N additional assemblies (R_2 ...., R_{n+1}) virtually identical to the first assembly and placed in parallel to it, with control logic (Cs) of the power supply and impedance matching assemblies (3_i, 3_i ...3_{n+1}) adapted to operate as slave by copying at all times the statuses of the variable elements (41_1), (42_1), (12_1)... of the master to respectively the variable elements (41_i), (42_i), (12_i)... of the power supply and impedance matching assemblies (3_i),a power splitter (9) from 1 input to N+1 outputs (90_1)...(90_{n+1}) connected to the N+1 power supply and impedance matching assemblies (3_1 ...3_{n+1}).

[c4] Antenna system according to claim 2, wherein:
the radiating structures (1_1)...(1_{n+1}) are loop type produced from a filiform conducting element which has one end (8_1)...(8_{n+1}) connected to earth and

the other end (7_1)...(7_{n+1}) connected to the input (30_1)...(30_{n+1}) of a power supply and impedance matching assembly (3_1)...(3_{n+1}) and wherein the power supply and impedance matching assemblies (3_1)... (3_{n+1}) are composed of at least:a broad band impedance step-up transformer (21),a variable pretuning capacitor (20) placed in series with the primary coil of a broad band impedance step-up transformer (21) and whose free terminal forms the input (30_1)... (30_{n+1}),an ATU (4) connected to the secondary coil of the transformer (21).

[c5] Antenna system according to claim 2, wherein the radiating structures (1_1)...(1_{n+1}) are single-pole type, produced from a filiform conducting element which has one end left free and the other end (7_1)...(7_{n+1}) connected to the input (30_1)...(30_{n+1}) of a power supply and impedance matching assembly (3_1)...(3_{n+1}).

[c6] Antenna system according to claim 1, wherein it comprises at least: a first assembly (R_1) consisting of a radiating structure (1_1), a power supply and impedance matching assembly (3_1) with control logic (Cm) enabling it to operate as master to manage the antenna system tuning phase by varying the values of the variable elements such as the capacitive (41_1), or inductive (42_1) elements and the variable capacitor (12_1) so that they converge towards the values leading to tuning.an additional assembly (R_2), identical to the first assembly (R_1) and placed head to foot with this first assembly (R_1), but whose control logic (Cs) of the power supply and impedance matching assembly (3_2) makes it operate as slave by copying at all times during the tuning phase the statuses of the variable elements (41_1), (42_1), (12_1)... of the master to respectively the variable elements (41_2), (42_2), (12_2)... of this slave assembly (3_2),a hybrid power splitter (9') with one input and 2 outputs ($90'_1$) ($90'_2$) in phase opposition connected to the 2 power supply and impedance matching assemblies (3_1) and (3_2).

[c7] Antenna system according to claim 6, wherein the radiating structures (1_1) and (1_2) are single-pole type.

[c8] Use of the system according to claim 1 in the frequency range from 1.5 to 30

MHz.

[c9] Method to tune an antenna system comprising (N+1) virtually identical radiating structures, with N greater than or equal to 1, comprising at least a step where each of the radiating structures arranged parallel to each other is powered and matched in impedance for a given operating frequency value wherein it comprises at least the following steps:

associate to one radiating structure a master function and to the other radiating structures a "slave" function,transmit the tuning parameters of the master radiating structure to the slave radiating structures,vary at least one of the tuning parameters so that they converge and to obtain tuning.

[c10] Method according to claim 9, wherein it comprises at least the following steps:

a) initialise the tuning parameters for the "master" radiating structure,

b) transmit the tuning parameters to the other radiating structures,

c) determine the impedance value $Z_{measured}$ output from the "master" radiating structure and compare said value with a specified value Z_{fixed},

d) whilst the said determined value is different from the specified value determine the values of the parameters required to tune the master radiating structure,

e) vary at least one of the tuning parameters of the master radiating structure and repeat steps c to d.

[c11] Method according to claim 9, wherein the parameters are transmitted by modulating the information at a frequency value different from that of the system operation.

[c12] Method according to claim 9, wherein the operating frequency range is chosen in the range 1.5 to 30 MHz.